IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

On Appeal to the Board of Appeals and Interferences

Appellant(s) : Guillermo J. TEARNEY et al.

Serial No. : 09/709,162

Filed : November 10, 2000

For : APPARATUS AND METHOD FOR PROVIDING INFORMATION FOR AT LEAST ONE STRUCTURE

Confirmation No.: 3219

Examiner: James M. Kish

Art Unit: 3737

BRIEF ON APPEAL

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United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

On May 6, 2011, Appellants submitted a Notice of Appeal to the U.S. Patent and Trademark Office (the "Patent Office") from the final rejection of claims 68-80 and 83 contained in the January 6, 2011 ("Final Office Action") and Advisory Action of April 26, 2011 in the above-identified patent application. On April 6, 2011, Appellants submitted an Amendment and Response to Final Office Action ("Amendment after Final"), in which arguments were presented to overcome the rejection of claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-148, 150, 151, 153, 154, 156, 157 and 159-162. After receipt of an Advisory Action dated April 26, 2011 in which the Examiner agreed to enter the amendments contained in the Amendment after Final, Appellants submitted a Pre-Appeal Brief Request for Review and Arguments contemporaneously with the Notice of Appeal on May 6, 2011. On October 17, 2011, a Notice of Panel Decision

from Pre-Appeal Brief Review ("Notice") was mailed to Appellants, maintaining the rejections contained in the Final Office Action.

In accordance with 37 C.F.R. § 41.37, this brief is being submitted in support of the appeal of the final rejection of pending claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-141, 147, 148, 150, 151, 153, 154, 156, 157 and 159-162, and in response to the Notice. For at least the reasons set forth below, the final rejection of pending claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-141, 147, 148, 150, 151, 153, 154, 156, 157 and 159-162 should be reversed.

I. REAL PARTY IN INTEREST

The real party in interest is the General Hospital Corporation of Boston, Massachusetts. The General Hospital Corporation is the assignee of the entire right, title and interest in the present application.

II. RELATED APPEALS AND INTERFERENCES

An appeal has been commenced by Appellants for U.S. Application Serial No. 11/781,722 with a filing date of July 23, 2007, which is a continuation application from the present application (as provided in the Related Proceedings Appendix). This proceeding is to appeal from final rejections of the claims pending is that application. Such appeal *may* effect or be effected by the Board's decision in the pending appeal.

Other than such appeal, Appellants and the Appellants' legal representatives are unaware of any interferences or other appeals related to the present

application that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal, except that

III. STATUS OF CLAIMS

Claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-148, 150, 151, 153, 154, 156, 157 and 159-162, as provided in the enclosed Appendix, are under consideration in the above-referenced application, all of which have been finally rejected.

As an initial matter, the Examiner confirmed in the Advisory Action that claims 142-146 are **allowed**.

In addition, claim 68-75, 81, 82, 84-87, 89-95, 101, 102, 104-107, 109-116, 118-128, 130, 137-140, 147-157, 161 and 162 were finally rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,318,024 issued to Kittrell et al. (the "Kittrell Patent"). Claims 88, 108, 117, 129, 131-136, 141 and 158-160 were finally rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the Kittrell Patent, in view of U.S. Patent No. 3,941,121 issued to Olinger et al. (the "Olinger Patent"). Claims 76-78 and 96-98 were finally rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the Kittrell Patent, in view of International Publication No. WO 99/44089 by Webb et al. (the "Webb Publication"). Further, claims 79, 80, 99 and 100 were finally rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the Kittrell Patent, in view of U.S. Patent No. 5,275,594 issued to Baker et al. (the "Baker Patent").

Appellants appeal from the final rejections of all pending claims 68, 70-72, 74, 76-82, 84-94, 96-102, 104-141, 147, 148, 150, 151, 153, 154, 156, 157 and 159-162. A copy of all of the pending claims is attached hereto in the Appendix.

IV. STATUS OF AMENDMENTS

Amendments to claims 68, 74, 76, 81, 82, 84, 89, 96-98, 101, 102, 113-115, 121, 125-127, 131-133 and 142-146 were made, but not for any reasons relating to patentability thereof, in Amendment after Final in response to the Final Office Action dated January 6, 2011. In the Advisory Action dated April 26, 2011, the Examiner confirmed that upon filing a Notice of Appeal, these amendments to claims 68, 74, 76, 81, 82, 84, 89, 96-98, 101, 102, 113-115, 121, 125-127, 131-133 and 142-146 will be entered. Accordingly, since the Notice of Appeal was filed the Pre-Appeal Brief Request on May 6, 2011, the claims as filed with Amendment after Final are now pending in the present application.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Exemplary embodiments of the present disclosure, as provided in independent claim 68, recites the following, and mapped to the specification and drawings of the application as provided as follows:

apparatus for providing information for at least one structure.

- As described in the specification of the present application, an imaging probe or endoscope can be provided is capable of obtaining real-time images and/or acquisition of depth information from the sample. (See Specification of the present application – "Present Application", p. 5, lns. 1-7).

<u>*an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;*</u>

- The distal probe 16 design of the present invention will now be discussed. FIG. 2 shows several possible configurations of the imaging head 28. The optics of the head 28 is designed to produce linear, spectrally encoded illumination and to collect the reflected light and transmit it back to the detection system 22. The light from the source 18 is delivered by the fiber 14 to the head 16 and focused by an objective 32 onto the sample 30. In a preferred embodiment the objective 32 is a lens, for example, but not by way of limitation, a GRIN (gradient index) lens, as is known to those skilled in the art. Other possible lens elements include, but are not limited to aspherical lenses, planoconcave, biconcave, concaveconvex or multi-element lens assemblies. (See *id.*, p. 11, lns. 5-13).
- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16 ... . The main body 12 incorporates a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. (See *id.*, p. 9, lns. 7-13).
- The light source 18 can be any broadband source capable of performing high-resolution imaging using the spectral encoding method. Examples of sources include, but are not limited to, ... wavelength tunable light sources ..., and the like. (See *id.*, p. 10, lns. 14-18).

<u>*an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;*</u>

- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. (See *id.*, p. 9, lns. 7-8).
- The cable 14 is preferably a single mode optical fiber. Another embodiment is a double-clad fiber where the illumination is through the central core and the detection is through the central core and outer cladding. Alternatively, the cable 14 can be a co-axial or side-by-side pair of fibers, with one fiber being for illumination by the source and the other fiber being for collection of light reflected from the sample 30. In a device where a multimode fiber system is used, there may be increased sensitivity and decreased speckling. (See *id.*, p. 10, lns. 1-7).

- The present invention describes the use of spectral encoding to create small diameter endoscopes and obtain high-resolution macroscopic images. (See *id.*, p. 5, lns. 22-23).

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and

- This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. The detection system is preferably associated with a computer with a microprocessor. (See *id.*, p. 9, lns. 15-18).
- The proximal end 24 of the probe 16 provides the mechanical scanning necessary for obtaining a two dimensional image. (See *id.*, p. 13, lns. 1-3; and Fig. 3).
- This detector fiber array can be used in pipes, conduits, or other closed or open systems not previously accessible to image longitudinally, three-dimensionally, panoramically, stereoscopically, and the like, using the multiple fiber array to image multiple points. (See *id.*, p. 26, ln. 20 to p. 27, ln. 1).

a dispersive arrangement which is configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to at least one section of the structure regarding which the information is being obtained on a macroscopic scale, wherein the image-forming lens arrangement forms an image of the anatomical structure.

- FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. [which includes] diffracting grating 34 (FIGS. 2A and/or 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. On the Figures the elements are: optical fiber 14; imaging head 16; objective 32; diffracting grating 34 (FIGS. 2A and 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). (See *id.*, p. 12, lns. 1-6).

- The use of the dispersing element 34 and the focusing of the spectrum on the sample 30 to be imaged produces a one-dimensional scan. In order to obtain a two-dimensional image, one must perform a transverse scan in the conjugate direction. This can be implemented in many different embodiments, but all include a

means of moving the spectrally encoded scan line. In a preferred embodiment the movement is achieved mechanically. (See *id.*, p. 12, lns. 7-12).

Exemplary embodiments of the present disclosure, as provided in independent claim 89, recites the following, and mapped to the specification and drawings of the application as provided as follows:

apparatus for obtaining diagnostic information associated with an anatomical structure and modifying at least one property of at least one portion of the structure

- As described in the specification of the present application, an imaging probe or endoscope can be provided is capable of obtaining real-time images and/or acquisition of depth information from the sample. (See Specification of the present application – "Present Application", p. 5, lns. 1-7).

an image-forming lens arrangement;

- The distal probe 16 design of the present invention will now be discussed. FIG. 2 shows several possible configurations of the imaging head 28. The optics of the head 28 is designed to produce linear, spectrally encoded illumination and to collect the reflected light and transmit it back to the detection system 22. The light from the source 18 is delivered by the fiber 14 to the head 16 and focused by an objective 32 onto the sample 30. In a preferred embodiment the objective 32 is a lens, for example, but not by way of limitation, a GRIN (gradient index) lens, as is known to those skilled in the art. Other possible lens elements include, but are not limited to aspherical lenses, planoconcave, biconcave, concaveconvex or multi-element lens assemblies. (See *id.*, p. 11, lns. 5-13).

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale, and including a plurality of fibers which are configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion of the structure regarding which the information is being obtained so as to

modify the at least one property, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;.

- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. (See *id.*, p. 9, lns. 7-8).
- The cable 14 is preferably a single mode optical fiber. Another embodiment is a double-clad fiber where the illumination is through the central core and the detection is through the central core and outer cladding. Alternatively, the cable 14 can be a co-axial or side-by-side pair of fibers, with one fiber being for illumination by the source and the other fiber being for collection of light reflected from the sample 30. In a device where a multimode fiber system is used, there may be increased sensitivity and decreased speckling. (See *id.*, p. 10, lns. 1-7).
- According to one exemplary embodiment, an endoscope 10 can include a main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. The main body 12 includes a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. In different exemplary embodiments, such beam-redirecting element 20 can be a beam splitter, a polarizing splitter, an optical circulator, etc. This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. (*See id.*, p. 9, lns. 7-17; and Fig. 1). Spectral dispersion in one dimension while scanning the other dimension provides two-dimensional illumination of the sample. (*See id.*, p. 11, lns. 22-23).
- The present invention describes the use of spectral encoding to create small diameter endoscopes and obtain high-resolution macroscopic images. (See *id.*, p. 5, lns. 22-23).
- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16 ... . The main body 12 incorporates a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. (See *id.*, p. 9, lns. 7-13).
- The light source 18 can be any broadband source capable of performing high-resolution imaging using the spectral encoding method. Examples of sources include, but are not limited to, ... wavelength tunable light sources ..., and the like. (See *id.*, p. 10, lns. 14-18).

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the

information is at least one of a two-dimensional image or a three dimensional image; and

- This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. The detection system is preferably associated with a computer with a microprocessor. (See *id.*, p. 9, lns. 15-18).
- The proximal end 24 of the probe 16 provides the mechanical scanning necessary for obtaining a two dimensional image. (See *id.*, p. 13, lns. 1-3; and Fig. 3).
- This detector fiber array can be used in pipes, conduits, or other closed or open systems not previously accessible to image longitudinally, three-dimensionally, panoramically, stereoscopically, and the like, using the multiple fiber array to image multiple points. (See *id.*, p. 26, ln. 20 to p. 27, ln. 1).

a dispersive arrangement configured to receive the first and second electromagnetic radiations, wherein the image-forming lens arrangement forms an image of the anatomical structure.

- FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. [which includes] diffracting grating 34 (FIGS. 2A and/or 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. On the Figures the elements are: optical fiber 14; imaging head 16; objective 32; diffracting grating 34 (FIGS. 2A and 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). (See *id.*, p. 12, lns. 1-6).

- The use of the dispersing element 34 and the focusing of the spectrum on the sample 30 to be imaged produces a one-dimensional scan. In order to obtain a two-dimensional image, one must perform a transverse scan in the conjugate direction. This can be implemented in many different embodiments, but all include a means of moving the spectrally encoded scan line. In a preferred embodiment the movement is achieved mechanically. (See *id.*, p. 12, lns. 7-12).

Exemplary embodiments of the present disclosure, as provided in independent claim 113, recites the following, and mapped to the specification and drawings of the application as provided as follows:

apparatus for providing information for at least one structure.

- As described in the specification of the present application, an imaging probe or endoscope can be provided is capable of obtaining real-time images and/or acquisition of depth information from the sample. (See Specification of the present application – "Present Application", p. 5, lns. 1-7).

an image-forming lens arrangement which is configured to provide a plurality of electro-magnetic radiation, and a dispersive arrangement configured to receive the electro-magnetic radiations and forward a dispersed radiation of each of the electro-magnetic radiations to at least one portion of the structure regarding which the information is being obtained and at least partially overlap the at least one portion, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges, wherein the image-forming lens arrangement forms an image of the anatomical structure, and wherein the electro-magnetic radiations are provided by at least one of a broadband source or a wavelength tuned source;

- The distal probe 16 design of the present invention will now be discussed. FIG. 2 shows several possible configurations of the imaging head 28. The optics of the head 28 is designed to produce linear, spectrally encoded illumination and to collect the reflected light and transmit it back to the detection system 22. The light from the source 18 is delivered by the fiber 14 to the head 16 and focused by an objective 32 onto the sample 30. In a preferred embodiment the objective 32 is a lens, for example, but not by way of limitation, a GRIN (gradient index) lens, as is known to those skilled in the art. Other possible lens elements include, but are not limited to aspherical lenses, planoconcave, biconcave, concaveconvex or multi-element lens assemblies. (See *id.*, p. 11, lns. 5-13).
- FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. [which includes] diffracting grating 34 (FIGS. 2A and/or 2D show a transmission grating, FIGS. 2B, C and E show a

reflecting grating 36, and FIG. 2F shows a fiber 38). FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. On the Figures the elements are: optical fiber 14; imaging head 16; objective 32; diffracting grating 34 (FIGS. 2A and 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). (See *id.*, p. 12, lns. 1-6).

- The use of the dispersing element 34 and the focusing of the spectrum on the sample 30 to be imaged produces a one-dimensional scan. In order to obtain a two-dimensional image, one must perform a transverse scan in the conjugate direction. This can be implemented in many different embodiments, but all include a means of moving the spectrally encoded scan line. In a preferred embodiment the movement is achieved mechanically. (See *id.*, p. 12, lns. 7-12).
- Dispersed radiation of each of the electro-magnetic radiations provided to at least one portion of the tissue regarding which the information is being obtained at least partially one another. (See *id.*, Figs. 2A-2F).
- By acquiring multiple images at different locations with the spectrally encoded probe, spectroscopic information within the bandwidth of the illuminating source may be obtained. Since each point on the sample is encoded by a different wavelength, moving the probe while acquiring images allows multiple wavelengths to be obtained from a single point on the specimen. Accumulation of these wavelengths reflected from the sample allows construction of a hyperspectral data set for each point in the image. (See *id.*, p. 20, lns. 4-9).
- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16 ... . The main body 12 incorporates a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. (See *id.*, p. 9, lns. 7-13).
- The light source 18 can be any broadband source capable of performing high-resolution imaging using the spectral encoding method. Examples of sources include, but are not limited to, ... wavelength tunable light sources ..., and the like. (See *id.*, p. 10, lns. 14-18).

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;.

- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. (See *id.*, p. 9, lns. 7-8).

- The cable 14 is preferably a single mode optical fiber. Another embodiment is a double-clad fiber where the illumination is through the central core and the detection is through the central core and outer cladding. Alternatively, the cable 14 can be a co-axial or side-by-side pair of fibers, with one fiber being for illumination by the source and the other fiber being for collection of light reflected from the sample 30. In a device where a multimode fiber system is used, there may be increased sensitivity and decreased speckling. (See *id.*, p. 10, lns. 1-7).
- The present invention describes the use of spectral encoding to create small diameter endoscopes and obtain high-resolution macroscopic images. (See *id.*, p. 5, lns. 22-23).

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image.

- This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. The detection system is preferably associated with a computer with a microprocessor. (See *id.*, p. 9, lns. 15-18).
- The proximal end 24 of the probe 16 provides the mechanical scanning necessary for obtaining a two dimensional image. (See *id.*, p. 13, lns. 1-3; and Fig. 3).
- This detector fiber array can be used in pipes, conduits, or other closed or open systems not previously accessible to image longitudinally, three-dimensionally, panoramically, stereoscopically, and the like, using the multiple fiber array to image multiple points. (See *id.*, p. 26, ln. 20 to p. 27, ln. 1).

Exemplary embodiments of the present disclosure, as provided in independent claim 125, recites the following, and mapped to the specification and drawings of the application as provided as follows:

apparatus for providing information for at least one structure.

- As described in the specification of the present application, an imaging probe or endoscope can be provided is capable of obtaining real-time images and/or acquisition of depth information from the sample. (See Specification of the present application – "Present Application", p. 5, lns. 1-7).

an image-forming lens arrangement which is configured to provide an electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

- The distal probe 16 design of the present invention will now be discussed. FIG. 2 shows several possible configurations of the imaging head 28. The optics of the head 28 is designed to produce linear, spectrally encoded illumination and to collect the reflected light and transmit it back to the detection system 22. The light from the source 18 is delivered by the fiber 14 to the head 16 and focused by an objective 32 onto the sample 30. In a preferred embodiment the objective 32 is a lens, for example, but not by way of limitation, a GRIN (gradient index) lens, as is known to those skilled in the art. Other possible lens elements include, but are not limited to aspherical lenses, planoconcave, biconcave, concaveconvex or multi-element lens assemblies. (See *id.*, p. 11, lns. 5-13).
- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16 ... . The main body 12 incorporates a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. (See *id.*, p. 9, lns. 7-13).
- The light source 18 can be any broadband source capable of performing high-resolution imaging using the spectral encoding method. Examples of sources include, but are not limited to, ... wavelength tunable light sources ..., and the like. (See *id.*, p. 10, lns. 14-18).

a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to a particular location on at least one portion of the structure regarding which the information is being obtained;

- FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. [which includes] diffracting grating 34 (FIGS. 2A and/or 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. On the Figures the elements are: optical fiber 14; imaging head 16; objective 32; diffracting grating 34 (FIGS. 2A and 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). (See *id.*, p. 12, lns. 1-6).

- The use of the dispersing element 34 and the focusing of the spectrum on the sample 30 to be imaged produces a one-dimensional scan. In order to obtain a two-dimensional image, one must perform a transverse scan in the conjugate direction. This can be implemented in many different embodiments, but all include a means of moving the spectrally encoded scan line. In a preferred embodiment the movement is achieved mechanically. (See *id.*, p. 12, lns. 7-12).

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and

- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. (See *id.*, p. 9, lns. 7-8).
- The cable 14 is preferably a single mode optical fiber. Another embodiment is a double-clad fiber where the illumination is through the central core and the detection is through the central core and outer cladding. Alternatively, the cable 14 can be a co-axial or side-by-side pair of fibers, with one fiber being for illumination by the source and the other fiber being for collection of light reflected from the sample 30. In a device where a multimode fiber system is used, there may be increased sensitivity and decreased speckling. (See *id.*, p. 10, lns. 1-7).
- The present invention describes the use of spectral encoding to create small diameter endoscopes and obtain high-resolution macroscopic images. (See *id.*, p. 5, lns. 22-23).

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image,

- This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. The detection system is preferably associated with a computer with a microprocessor. (See *id.*, p. 9, lns. 15-18).
- The proximal end 24 of the probe 16 provides the mechanical scanning necessary for obtaining a two dimensional image. (See *id.*, p. 13, lns. 1-3; and Fig. 3).
- This detector fiber array can be used in pipes, conduits, or other closed or open systems not previously accessible to image longitudinally, three-dimensionally, panoramically, stereoscopically,

and the like, using the multiple fiber array to image multiple points. (See *id.*, p. 26, ln. 20 to p. 27, ln. 1).

wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to the particular location of the at least one portion, and wherein at least one property of the dispersed radiation is capable of being different from a property of the further radiation, wherein the image-forming lens arrangement forms an image of the anatomical structure.

- The spot for each wavelength is focused at a separate position on the sample. The reflectance as a function of transverse location is determined by measuring the reflected spectrum. The head 16 also provides one-dimensional mechanical scanning orthogonal (or other angle) to the spectrally encoded axis. Spectral dispersion in one dimension while scanning the other dimension provides two-dimensional illumination of the sample. (See *id.*, p. 11, lns. 19-23).
- In yet a further alternative embodiment of the present invention, shown in FIG. 6, an imaging apparatus 200 is provided comprising: an elongated hollow generally cylindrical body 202; a plurality of optical fibers 204 defining an array 206 disposed at least partially within the body 202 each fiber 204 having a distal end 208; a plurality of lenses 210, each lens 210 associated with a distal end 208 of each optical fiber 204 as part of said array 206, such that each lens 210 is capable of focusing energy transmitted from an energy source (not shown) through the array 206 on a distinct position on a target sample 212. Each optical fiber 204 in the array 206 has a different length such that each distal end 208 and associated lens 210 does not substantially overlap any other lens in said array 206. This embodiment also incorporates a means, such as, but not limited to, mechanical, piezoelectric transducer or the like, for rotating said array about an axis. (See *id.*, p. 20, lns. 11-21).

Exemplary embodiments of the present disclosure, as provided in independent claim 131, recites the following, and mapped to the specification and drawings of the application as provided as follows:

apparatus for providing information for at least one structure.

- As described in the specification of the present application, an imaging probe or endoscope can be provided is capable of obtaining real-time images and/or acquisition of depth information

from the sample. (See Specification of the present application – "Present Application", p. 5, lns. 1-7).

an image-forming lens arrangement which is configured to provide an electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

- The distal probe 16 design of the present invention will now be discussed. FIG. 2 shows several possible configurations of the imaging head 28. The optics of the head 28 is designed to produce linear, spectrally encoded illumination and to collect the reflected light and transmit it back to the detection system 22. The light from the source 18 is delivered by the fiber 14 to the head 16 and focused by an objective 32 onto the sample 30. In a preferred embodiment the objective 32 is a lens, for example, but not by way of limitation, a GRIN (gradient index) lens, as is known to those skilled in the art. Other possible lens elements include, but are not limited to aspherical lenses, planoconcave, biconcave, concaveconvex or multi-element lens assemblies. (See *id.*, p. 11, lns. 5-13).
- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16 ... . The main body 12 incorporates a broadband source 18 that sends the illuminating light to the beam-redirecting element 20. (See *id.*, p. 9, lns. 7-13).
- The light source 18 can be any broadband source capable of performing high-resolution imaging using the spectral encoding method. Examples of sources include, but are not limited to, ... wavelength tunable light sources ..., and the like. (See *id.*, p. 10, lns. 14-18).

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and

- FIG. 1 shows an endoscope 10 of a preferred embodiment consisting of main body 12 connected through a hybrid (optical and electrical) cable 14 to a probe 16. (See *id.*, p. 9, lns. 7-8).
- The cable 14 is preferably a single mode optical fiber. Another embodiment is a double-clad fiber where the illumination is through the central core and the detection is through the central core and outer cladding. Alternatively, the cable 14 can be a co-axial or side-by-side pair of fibers, with one fiber being for illumination by the source and the other fiber being for collection of light reflected from

the sample 30. In a device where a multimode fiber system is used, there may be increased sensitivity and decreased speckling. (See *id.*, p. 10, lns. 1-7).

- The present invention describes the use of spectral encoding to create small diameter endoscopes and obtain high-resolution macroscopic images. (See *id.*, p. 5, lns. 22-23).

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image,

- This beam-redirecting element 20 sends out the light from the source 18 to the probe 16 and redirects the returning light from the probe 16 to the detection and display system 22. The detection system is preferably associated with a computer with a microprocessor. (See *id.*, p. 9, lns. 15-18).
- The proximal end 24 of the probe 16 provides the mechanical scanning necessary for obtaining a two dimensional image. (See *id.*, p. 13, lns. 1-3; and Fig. 3).
- This detector fiber array can be used in pipes, conduits, or other closed or open systems not previously accessible to image longitudinally, three-dimensionally, panoramically, stereoscopically, and the like, using the multiple fiber array to image multiple points. (See *id.*, p. 26, ln. 20 to p. 27, ln. 1).

a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to a particular location on at least one portion of the structure regarding which the information is being obtained, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller, wherein the image-forming lens arrangement forms an image of the anatomical structure.

- FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. [which includes] diffracting grating 34 (FIGS. 2A and/or 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). FIGS. 2B-F illustrate alternative embodiments of the probe 16 design of FIG. 2A. On the Figures the elements are: optical fiber 14; imaging head 16; objective 32; diffracting grating 34 (FIGS. 2A and 2D show a transmission grating, FIGS. 2B, C and E show a reflecting grating 36, and FIG. 2F shows a fiber 38). (See *id.*, p. 12, lns. 1-6).

- The use of the dispersing element 34 and the focusing of the spectrum on the sample 30 to be imaged produces a one-dimensional scan. In order to obtain a two-dimensional image, one must perform a transverse scan in the conjugate direction. This can be implemented in many different embodiments, but all include a means of moving the spectrally encoded scan line. In a preferred embodiment the movement is achieved mechanically. (See *id.*, p. 12, lns. 7-12).
- In one embodiment, the present invention may be deployed through a needle with a gauge threshold of 20 or higher. This embodiment would allow minimally invasive access to most internal organs for the purpose of primary diagnosis, screening, or biopsy guidance. For example, areas of the spinal cord can be viewed with the present invention because the needle gauge threshold of 20 gauge or higher is met by using the endoscope of the present invention. (See *id.*, p. 21, lns. 15-20).

Independent claims 142-146 have been indicated as being ***allowed***. Accordingly, it is not necessary to provide exemplary support for these claims in the specification of the present application.

VI. GROUNDS OF REJECTION TO BE REVIEWED

The grounds of rejection on appeal to be reviewed are as follows:

a) whether claims 68-75, 81, 82, 84-87, 89-95, 101, 102, 104-107, 109-116, 118-128, 130, 137-140, 147-157, 161 and 162, which stand finally rejected under 35 U.S.C. § 102(b), are anticipated by the Kittrell Patent;

b) whether claims 88, 108, 117, 129, 131-136, 141 and 158-160, which stand finally rejected under 35 U.S.C. § 103(a), are unpatentable over the Kittrell Patent, even if combinable with the Olinger Patent;

c) whether claims 76-78 and 96-98 which stand finally rejected under 35 U.S.C. § 103(a), is unpatentable over the Kittrell Patent, even if combinable with the Webb Publication; and

d) whether claims 79, 80, 99 and 100, which stand finally rejected under 35 U.S.C. § 103(a), are unpatentable over the Kittrell Patent, even if combinable with the Baker Patent.

VII. ARGUMENTS

1. Primary Prior Art relied on by the Examiner

The Examiner relies on the Kittrell Patent in an alleged combination with the Haake Patent and/ the Baker Patent for maintaining the final rejection of independent claims 68 and 76, and the claims which depend therefrom.

The Kittrell Patent describes a laser endoscope for generating a spectrally resolved spatial image of tissue. Fiber optics positioned within an optically shielded endoscope are used to deliver laser radiation to tissue to be imaged. Radiation returning through the fiber optics from the tissue is spectrally resolved and used to generate an image of tissue that can assist in diagnosis and treatment. (See Kittrell Patent, Abstract).

A generalized spectral system is shown in Figs. 21 and 22 of the Kittrell Patent. As illustrated in Fig. 21, an excitation light 95 is sent from a laser or conventional light source into a selected optical fiber 20. This light passes through a beam splitter 52 or a mirror with a hole 50 (as shown in Fig. 22), and focused onto the input end 40 by a lens 41. The light exits the distal end of the optical fiber 20, passes

through the optical shield 12, and impinges on the tissue 34 (of Fig. 4). The fluorescence and scattered light is returned via the same or a different optical fiber 20 to the proximal end 40 of the optical fiber 20. This return light 54 is separated by the beam splitter 52 or by the mirror 50 with hole 51 (see Fig. 22), and enters a spectrum analyzer 60. A diffraction grating 68 of the spectral detector 65 can disperse the return light from a target. The dispersed light is projected onto a multichannel detector 70 which has many detectors. (See *id.*, col. 19, lns. 20-47). Fig. 13B of the Kittrell Patent illustrates the use of a prism, but without any lens.

The Olinger Patent relates to a needle endoscope includes a hollow needle of about 18-gauge, a lens system within the needle, an image transmitting bundle of flexible fiber-optic rods within the needle, a plurality of illumination transmitting fiber-optic rods within the needle, an operative channel within the needle, and apparatus to shift the image transmitting bundle with respect to the lens system and needle to provide focus adjustment for focusing the endoscope on objects at various distances from the end of the needle. (See Olinger Patent, Abstract).

The Webb Publication relates to a scanning confocal microscopy system, especially useful for endoscopy with a flexible probe which is connected to the end of an optical fiber (9). The probe has a grating (12) and a lens (14) which delivers a beam of multi-spectral light having spectral components which extend in one dimension across a region of an object and which is moved to scan in another dimension. The reflected confocal spectrum is measured to provide an image of the region. (See Webb Publication, Abstract).

The Baker Patent relates to angioplasty system and method for identification and laser ablation of atherosclerotic plaque at a target site in a blood vessel. Such system and method employ fluorescence analysis for identification of noncalcified plaque and calcium photoemission analysis for identification of calcified plaque. Calcified plaque is identified by time domain analysis of calcium photoemission. A high energy pulsed ultraviolet laser can be used for stimulation of fluorescence and for stimulation of calcium photoemission. The system is capable of distinguishing between calcium photoemission and a defective condition of optical fibers that are used to deliver laser energy to the target site. In an another embodiment of the angioplasty system, calcium photoemission is identified during a nonablative initial portion of the laser ablation pulse. When calcium photoemission is not identified, the laser ablation pulse is terminated during the initial nonablative portion thereof. (See Baker Patent, Abstract).

2. Relevant Case Law and Procedure(s)

<u>35 U.S.C. § 102 Case Law</u>

In order for a claim to be rejected as anticipated under 35 U.S.C. § 102, each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. Manual of Patent Examining Procedures, § 2131; *see also Lindman Machinenfabrik v. Am Hoist and Derrick*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

35 U.S.C. § 103 Case Law

"To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness." *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

> Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. "The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*,

383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the "TSM test"). *See In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit's application of the TSM test, *see KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007), the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; *see also In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, *21 (October 12, 2007). Further, the Court underscored that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O'Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant's disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. *See In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985); *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

3. **Issues on Appeal**

Applicants respectfully assert that the Kittrell Patent, taken alone or in combination with the Olinger Patent, the Webb Publication and/or the Baker Patent, fails to teach, suggest or disclose the subject matter recited in amended independent claims 68, 89, 113, 125 and 131, and the claims which depend therefrom, for at least the following reasons.

A. Independent Claims 68, 89, 113, 125 and 131 and Dependent Claims

Independent claim 68 relates to an apparatus for obtaining information associated with an anatomical structure which comprises, *inter alia*:

> **an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation**, **wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;**
>
> an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;
>
> at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and
>
> **a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation** and **forward a dispersed radiation thereof to at least one section of the structure regarding which the information is being obtained on a macroscopic scale,** wherein **the image-forming lens arrangement forms an image of the anatomical structure.**

Independent claim 89 relates to an apparatus for obtaining diagnostic information associated with an anatomical structure and modifying at least one property of at least one portion of the structure which comprises, *inter alia*:

> **an image-forming lens arrangement**
>
> an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale ..., wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;
>
> at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and
>
> **a dispersive arrangement configured to receive the first and second electromagnetic radiations,** wherein **<u>the image-forming lens arrangement forms an image of the anatomical structure</u>**.

Independent claim 113 relates to an apparatus for obtaining information associated with an anatomical structure which comprises, *inter alia*:

> an image-forming lens arrangement configured to provide a plurality of electro-magnetic radiations, and a dispersive arrangement configured to receive the electro-magnetic radiations and forward a dispersed radiation of each of the electro-magnetic radiations to at least one portion of the structure regarding which the information is being obtained and at least partially overlap the at least one portion ..., wherein <u>the image-forming lens arrangement forms an image of the anatomical structure</u> , and wherein the electro-magnetic radiations are provided by at least one of a broadband source or a wavelength tuned source;
>
> **an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and**
>
> at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image.

Independent claim 125 relates to an apparatus for obtaining information for an anatomical structure which comprises, *inter alia*:

> **an image-forming lens arrangement configured to provide an electro-magnetic radiation**, wherein **the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source**,
>
> a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to a particular location on at least one portion of the structure regarding which the information is being obtained …, wherein the image-forming lens arrangement forms an image of the anatomical structure;
>
> **an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and**
>
> **at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image.**

Independent claim 131 relates to an apparatus for obtaining information associated with an anatomical structure which comprises, *inter alia*:

> **an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;**
>
> **an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;**
>
> **at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image**; and
>
> **a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation** and **forward a dispersed radiation thereof to at least one portion of the structure regarding which the information is being obtained** …, wherein the image-forming lens arrangement forms an image of the anatomical structure.

Clearly, each of Independent claims 89, 113, 125 and 131 recite **an image-forming lens arrangement that forms an image of the anatomical structure**. Indeed, each of independent claims 68, 89, 113, 125 and 131 not only recites an "image-forming lens arrangement", but also (i) a "dispersive arrangement", (ii) that the radiation is forwarded to at least one portion of a "structure regarding which the information is being obtained", and (iii) that the image-forming lens arrangement forms an image of the anatomical structure. In addition, each of independent claims 68, 89, 113, 125 and 131 recites (i) that the electro-magnetic radiation(s) is/are provided by a broadband source and/or a wavelength tuned, (ii) an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale, and (iii) at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, where the information is at least one of a two-dimensional image or a three dimensional image.

First, Appellants respectfully assert that the Kittrell Patent fails to teach, suggest or disclose that **an image-forming lens arrangement which forms an image of the anatomical structure**, as recited in independent claims 68, 89, 113, 125 and 131. In the Final Office Action, the Examiner pointed to lenses 40 and 41 as being equivalent to the lens arrangement recited in each of amended independent claims 68, 89, 113, 125 and 131. (See Final Office Action dated January 6, 2011, p 5). However, the portion of the Kittrell Patent that is pointed to by the Examiner as being the lens arrangement that form an image *actually cannot form an image at all*. For example, the glass 12 may receive radiation, and this glass 12 may be curved, but cannot at all form an image of any anatomical structure. Indeed, as shown in Figs. 21 and 22 of the

Kittrell Patent, the lens 41 forwards the radiation to a spectral analyzer 60, which then forms an image but only based on the spectrum (i.e., not an image) of the radiation provided by the lens 41, **which does not provide any image to the spectrum analyzer 60** (which can only be equated – if at all – to the further arrangement recited in independent claims 68,89, 113, 125 and 131. Even if the lens 41 of the Kittrell Patent can be equated to the recited lens arrangement of amended independent claims 68, 89, 113, 125 and 131, such lens 41 only *forms an image of the fibers*, and certainly not of the anatomical structure, as explicitly recited in independent claims 68, 89, 113, 125 and 131. Clearly, no image at all (any of spectral, tomographic, etc.) ***of the anatomical structure*** is formed by the lens 41 of the Kittrell Patent. In addition, the shield 12 of the Kittrell Patent does not form an image of anything, much less the anatomical structure.

In the Advisory Action, the Examiner alleges that it is "inherent that an image forming lens arrangement would form an image. Furthermore, based on the preamble, it would be inherently an image of the structure for which the information is being obtained." (Advisory Action dated April 26, 2011, p. 2, Ins. 4-5). Appellants respectfully disagree.

It is respectfully asserted that one having ordinary skill in the art certainly must understand that the image can be formed on the lens arrangement using an equation known to those having ordinary skill in the art, e.g., 1/f =1/o +1/l, where f is a focal length, o is an object distance to the lens, and l is an distance from the lens to the location, where the image is formed. This is the equation that would form an image of the structure on and by the lens arrangement. However, *none of the lenses described or shown in the Kittrell Patent are in a configuration which would allow any images to be*

formed thereon or thereby. For example, the Examiner previously alleged that the Kittrell Patent's shield and prism of Fig. 13D can be the combination as recited in independent claims. However, this combination does not allow the shield 12 to satisfy the above equation which is known to provide an image formation. In contrast, the image forming arrangement (which includes an objective 32, with or without a polarizer 42) provided in conjunction with, e.g., a holographic grating 34 describes at p. 8. Ln. 19 to o. 9, ln. 23 of the specification of the present application, certainly effectuates the production of the image thereby, and certainly satisfy the image forming equation (which must be known to those having ordinary skill in the art). Thus, the Examiner's further contention in the Advisory Action that the image formed by the image-forming lens arrangement is not described in the present application as indicated herein is *inaccurate*, especially in view of the explicit description indicated above contained in the specification of the present application.

Second, in the latest Final Office Action, the Examiner pointed to Fig. 23 of the Kittrell Patent, and contended that the lens 40 provided in such figure being such recited lens arrangement. (See Final Office Action dated April 26, 2011, p. 2, second full para.). However, the lens 40 only receives light from a source and the fiber, but does not form any image (any of spectral, tomographic, etc.) thereon. In Fig. 23 of the Kittrell Patent, it is clear that the lens 40 transmits the radiation to the fiber, but that such lens 40 does not form any image. Thus, it is respectfully asserted that the Kittrell Patent lacks **the image-forming lens arrangement which forms an image of the anatomical structure**, as recited in independent claims 68, 89, 113, 125 and 131 of the present application.

Third, while the lens 41 of the Kittrell Patent may be image-forming, the radiation being forwarded to the spectral analyzer 60 is in no way **then forwarded to at least one section of any structure, much less regarding which the information is being obtained**. In summary, the configuration of *the image-forming lens providing the radiation to the dispersive arrangement which then forwards the dispersed radiation to the structure*, as recited in independent claims 68, 89, 113, 125 and 131, is in no way described or shown in the Kittrell Patent, much less in Figs. 21 and 22 thereof.

Fourth, Figs. 13A-13F of the Kittrell Patent show that the transparent shield/enclosure 12 appears to have an equal distance between the inner surface and the outer surface along the section thereof through which the radiation is exhibited. Thus, no image can be formed by such components of the Kittrell Patent. In addition, the lens 41 of the Kittrell Patent which forwards the radiation from a laser to the fibers 20 also does not provide or form any images, and thus cannot be equated to the "**image-forming lens arrangement**" **that forms an image of the anatomical structure**, as recited in independent claims 68, 89, 113, 125 and 131.

Fifth, during the interview the Examiner suggested adding the additional recitations of previously-pending dependent claims, as follows:

- that the electro-magnetic radiation(s) is/are provided by a broadband source and/or a wavelength tuned source (as previously recited in previously- cancelled claim 69),
- an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale (as previously recited in previously-cancelled claim 73), and
- at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three

dimensional image (as previously recited in previously-cancelled claim 73).

In the Interview Summary dated February 22, 2011, the Examiner admitted that when such amendments and arguments are received, new search and consideration will be made. In the Advisory Action, the Examiner appears to reverse his position, and contends that the only agreement was made was that these amendments "would be a good direction to go with ... so as to what the system is." (See Advisory Action, p. 2, lns. 17-20). Such position contradicts the statement made regarding the discussion held during the interview (as evidenced in the Interview Summary prepared by the Examiner). Indeed, the Examiner did not perform a new search (as indicated during the Interview). In addition, the Examiner failed to consider the recitation of an optical waveguide configured to transmit and receive the information from the structure ***on a macroscopic scale***, as recited in independent claims 68, 89, 113, 125 and 131. Indeed, such subject matter is certainly not described in the Kittrell Patent. Further, Appellants respectfully assert that the combination all of the additional recitations with the other recitations in the claims render the respective independent claims novel and non-obvious.

The Olinger Patent, the Webb Publication and/or the Baker Patent do not cure such deficiencies of the Kittrell Patent, and the Examiner does not contend that they do.

Therefore, for at least the reasons described herein above, Appellants respectfully assert that the Kittrell Patent does not render the subject matter recited in amended independent claim 68, 89, 113, 125 and 131 anticipated under 35 U.S.C. §

102(b). The claims which depend from such independent claims are also not taught, suggested or disclosed by the Kittrell Patent, taken alone or in combination with the Olinger Patent, the Webb Publication and/or the Baker Patent pursuant to U.S.C. §§ 102(b) and 103(a), as applicable, for at least the same reasons.

B. Dependent Claim 147

Further, regarding claim 147, this claim depend from claim 74 which depends from independent claim 68, and also recites that "**the optical fiber has an end portion that is provided at a position of an image plane of the at least one portion which is established by the lens.**" In the Advisory Action dated April 26, 2011, the Examiner contends that such subject matter is disclosed in the Kittrell Patent with a shield acting as a lens, and that the shield is in a position of the image plane of the portion. (See Advisory Action, p. 2, last three lines).

However, it is again respectfully asserted that the Kittrell Patent nowhere discloses that the optical fiber has **an end portion that is provided at a position of an image plane of at least one portion** of the anatomical structure which is established by the lens. Indeed, the shield of the Kittrell Patent is ***clearly not and cannot be*** any optical fiber that has an end portion provided at a position plane of the portion(s) of the structure. Further, the shield of the Kittrell Patent its is certainly not provided on any image plane of the portion(s) of the structure. In addition, since the lens/shield of the Kittrell Patent does not form an image as discussed herein above, the end portion of Kittrell Patent's fiber is not provided at any position of the image plane of the portion(s).

The Olinger Patent, the Webb Publication and/or the Baker Patent do not cure such deficiencies of the Kittrell Patent, and the Examiner does not contend that they do.

Accordingly, Appellants respectfully assert that the subject matter recited in claim 147 is not disclosed by the Kittrell Patent for the same reasons as provided above regarding independent claim 68, and for the additional reasons presented herein specifically regarding claim 147.

C. Summary

Therefore, for at least the reasons described herein above, Appellants respectfully request the Board to reverse the Examiner's rejections of 35 U.S.C. § 102(b) rejection of independent claims 68, 89, 113, 125 and 131, and 35 U.S.C. §§ 102(b) and 103(a) rejections of the claims which depend from independent claims 68, 89, 113, 125 and 131.

4. Conclusion

For at least the reasons indicated above, Appellants respectfully submit that the invention recited in the presently rejected claims of the present application, as discussed above, is new, non-obvious and useful. Reversal of the Examiner's final rejection of the claims is therefore respectfully requested.

Respectfully submitted,

Dated: November 14, 2011

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CLAIMS APPENDIX

Claims as currently pending:

Claims 1-67 (Cancelled).

68. An apparatus for obtaining information associated with an anatomical structure, comprising:

an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and

a dispersive arrangement which is configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to at least one section of the structure regarding which the information is being obtained on a macroscopic scale, wherein the image-forming lens arrangement forms an image of the anatomical structure.

Claim 69 (Cancelled).

70. The apparatus according to claim 68, wherein the dispersive arrangement contains at least one of a diffractive element or a refractive element.

71. The apparatus according to claim 70, wherein the dispersive element is at least one of a fiber grating, a blazed grating, a binary, prism or a holographic lens grating.

72. The apparatus according to claim 68, wherein the lens arrangement contains at least one of a gradient index lens, a reflective mirror lens grating combination or a diffractive lens.

Claim 73 (Cancelled).

74. The apparatus according to claim 68, wherein the optical waveguide is an optical fiber.

Claim 75 (Cancelled).

76. The apparatus according to claim 69, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 300,000 to 1,000,000 resolvable points.

77. The apparatus according to claim 75, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 150,000 to 300,000 resolvable points.

78. The apparatus according to claim 75, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 100,000 to 150,000 resolvable points.

79. The apparatus according to claim 68, wherein the apparatus is a probe having a diameter of less than about 2.0 mm.

80. The apparatus according to claim 68, wherein the apparatus is a probe having a diameter of less than about 1.0 mm.

81. The apparatus according to claim 68, further comprising an additional arrangement configured to modify at least one property of the structure.

82. The apparatus according to claim 81, wherein the additional arrangement is at least one of an ultrasonic arrangement, a laser arrangement, a cauterizing tip, a set of retractable teeth forming a claw for grabbing an object, a suction tube or an arrangement for grasping a sample.

Claim 83 (Cancelled).

84. The apparatus according to claim 68, wherein the optical waveguide comprises a plurality of fibers each of which is configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one section so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one section so as to modify at least one property of the structure.

85. The apparatus according to claim 84, wherein the first and second fibers are polished at different angles from one another.

86. The apparatus according to claim 68, wherein the dispersive arrangement is further configured to at least partially overlap the at least one section with a plurality of electro-magnetic radiations, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges.

87. The apparatus according to claim 68, wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to a particular location of the at least one section, and

wherein the at least one property of the dispersed radiation is capable of being different from a property of the further radiation.

88. The apparatus according to claim 68, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller.

89. An apparatus for obtaining diagnostic information associated with an anatomical structure and modifying at least one property of at least one portion of the structure, comprising:

an image-forming lens arrangement;

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale, and including a plurality of fibers which are configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion of the structure regarding which the information is being obtained so as to modify the at least one property, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and

a dispersive arrangement configured to receive the first and second electromagnetic radiations, wherein the image-forming lens arrangement forms an image of the anatomical structure.

90. The apparatus according to claim 89, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source.

91. The apparatus according to claim 89, wherein the dispersive arrangement contains at least one of a diffractive element or a refractive element.

92. The apparatus according to claim 91, wherein the dispersive element is at least one of a fiber grating, a blazed grating, a binary, prism or a holographic lens grating.

93. The apparatus according to claim 89, wherein the lens arrangement contains at least one of a gradient index lens, a reflective mirror lens grating combination or a diffractive lens.

94. The apparatus according to claim 89, wherein the optical waveguide is an optical fiber.

Claim 95 (Cancelled).

96. The apparatus according to claim 89, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 300,000 to 1,000,000 resolvable points.

97. The apparatus according to claim 89~~95~~, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 150,000 to 300,000 resolvable points.

98. The apparatus according to claim 89, wherein the at least one of the two-dimensional image or the three-dimensional image contains from about 100,000 to 150,000 resolvable points.

99. The apparatus according to claim 89, wherein the apparatus is a probe having a diameter of less than about 2.0 mm.

100. The apparatus according to claim 89, wherein the apparatus is a probe having a diameter of less than about 1.0 mm.

101. The apparatus according to claim 89, further comprising an additional arrangement configured to modify at least one property of the structure.

102. The apparatus according to claim 101, wherein the additional arrangement is at least one of an ultrasonic arrangement, a laser arrangement, a cauterizing tip, a set of

retractable teeth forming a claw for grabbing an object, a suction tube or an arrangement for grasping a sample.

Claim 103 (Cancelled).

104. The apparatus according to claim 89, wherein at least one first fiber of the fibers is configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers is configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

105. The apparatus according to claim 89, wherein the dispersive arrangement is further configured to at least partially overlap the at least one portion with a plurality of electro-magnetic radiations, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges.

106. The apparatus according to claims 105, wherein the first and second electro-magnetic radiations overlap one another at the at least one portion.

107. The apparatus according to claim 89, wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to

provide a further radiation to a particular location of the at least one portion, and wherein the at least one property of the dispersed radiation is capable of being different from a property of the further radiation.

108. The apparatus according to claim 89, further comprising a lens arrangement, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller.

109. The apparatus according to claim 89, wherein the dispersive arrangement is further configured to forward a dispersed radiation thereof to at least one portion of the structure on a macroscopic scale.

110. The apparatus according to claim 89, further comprising a plurality of probes, each of the probe capable of providing spatially encoded location information associated with the at least one portion.

111. The apparatus according to claim 89, wherein the dispersive arrangement includes at least one of a fiber grating, a blazed grating, a binary, a prism or a holographic lens grating.

112. The apparatus according to claim 111, further comprising a further grating which follows the dispersive arrangement and provided in a path of the electro-magnetic radiation.

113. An apparatus for obtaining information associated with an anatomical structure, comprising:

an image-forming lens arrangement which is configured to provide a plurality of electro-magnetic radiations, and a dispersive arrangement configured to receive the electro-magnetic radiations and forward a dispersed radiation of each of the electro-magnetic radiations to at least one portion of the structure regarding which the information is being obtained and at least partially overlap the at least one portion, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges, wherein the image-forming lens arrangement forms an image of the anatomical structure, and wherein the electro-magnetic radiations are provided by at least one of a broadband source or a wavelength tuned source;

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image.

114. The apparatus according to claim 113, wherein the optical waveguide comprises a plurality of optical fibers, wherein at least one first fiber of the fibers is configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the

information, and at least one second fiber of the fibers is configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

115. The apparatus according to claim 113, wherein the optical waveguide comprises a plurality of fibers each of which is configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

116. The apparatus according to claim 113, wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to a particular location of the at least one portion, and wherein the at least one property of the dispersed radiation is capable of being different from a property of the further radiation.

117. The apparatus according to claim 113, further comprising a lens arrangement, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller.

118. The apparatus according to claim 113, wherein the dispersive arrangement is further configured to forward the dispersed radiation thereof to at least one portion of the structure on a macroscopic scale.

119. The apparatus according to claim 113, wherein the dispersive arrangement includes at least one of a fiber grating, a blazed grating, a binary, a prism or a holographic lens grating.

120. The apparatus according to claim 119, further comprising a further grating which follows the dispersive arrangement and provided in a path of the electro-magnetic radiation.

121. The apparatus according to claim 113, wherein the optical waveguide comprises a plurality of fibers each of which is configured to provide there through the electro-magnetic radiations.

122. The apparatus according to claim 121, wherein the electro-magnetic radiations provided from the structure are associated with the information.

123. The apparatus according to claim 122, wherein the information is at least one of a color, a multispectral dataset or a hyperspectral dataset.

124. The apparatus according to claim 123, wherein the at least one of the multispectral dataset or the hyperspectral dataset is at least one of a two-dimensional image, a three-dimensional image or a four-dimensional image.

125. An apparatus for obtaining information associated with an anatomical structure, comprising:

an image-forming lens arrangement which is configured to provide an electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to a particular location on at least one portion of the structure regarding which the information is being obtained;

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale; and

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image,

wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to the particular location of the at least one portion, and wherein at least one property of the dispersed radiation is capable of being different from a property of the further radiation, wherein the image-forming lens arrangement forms an image of the anatomical structure.

126. The apparatus according to claim 125, wherein the optical waveguide comprises a plurality of optical fibers, wherein at least one first fiber of the fibers is configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers is configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

127. The apparatus according to claim 125, wherein the optical waveguide comprises a plurality of fibers each of which is configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

128. The apparatus according to claim 125, wherein the dispersive arrangement is further configured to at least partially overlap the at least one portion with a plurality of electro-magnetic radiations, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges.

129. The apparatus according to claim 125, further comprising a lens arrangement, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller.

130. The apparatus according to claim 125, wherein the dispersive arrangement is further configured to forward the dispersed radiation thereof to at least one portion of the structure on a macroscopic scale.

131. An apparatus for obtaining information associated with an anatomical structure, comprising:

an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation, wherein the electro-magnetic radiation is provided by at least one of a broadband source or a wavelength tuned source;

an optical waveguide configured to transmit and receive the information from the structure on a macroscopic scale;

at least one further arrangement which is structured to obtain the information based on a radiation obtained from the structure, wherein the information is at least one of a two-dimensional image or a three dimensional image; and

a dispersive arrangement which is configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to at least one portion of the structure regarding which the information is being obtained, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle

having a gauge of about 20 or smaller, wherein the image-forming lens arrangement forms an image of the anatomical structure.

132. The apparatus according to claim 131, wherein the optical waveguide comprises a plurality of optical fibers, wherein at least one first fiber of the fibers is configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers is configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

133. The apparatus according to claim 131, wherein the optical waveguide comprises a plurality of fibers each of which is configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion so as to modify at least one property of the structure.

134. The apparatus according to claim 131, wherein the dispersive arrangement is further configured to at least partially overlap the at least one portion with a plurality of electro-magnetic radiations, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a

wavelength in a second range, and wherein each of the first and second ranges are at least one element that is different from another one of the second ranges.

135. The apparatus according to claim 131, wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to a particular location of the at least one portion, and wherein the at least one property of the dispersed radiation is capable of being different from a property of the further radiation.

136. The apparatus according to claim 131, wherein the dispersive arrangement is further configured to forward the dispersed radiation thereof to at least one portion of the structure on a macroscopic scale.

137. The apparatus according to claim 68, wherein the dispersive arrangement includes a grating.

138. The apparatus according to claim 89, wherein the dispersive arrangement includes a grating.

139. The apparatus according to claim 113, wherein the dispersive arrangement includes a grating.

140. The apparatus according to claim 125, wherein the dispersive arrangement includes a grating.

141. The apparatus according to claim 131, wherein the dispersive arrangement includes a grating.

142. An apparatus for obtaining information associated with a structure, comprising:

an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation; and

a dispersive arrangement which is configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to at least one section of the structure regarding which the information is being obtained on a macroscopic scale, wherein the dispersive arrangement is structured to provide at least 625 spectrally-resolvable points without a controlled mechanical motion.

143. An apparatus for obtaining diagnostic information associated with a structure and modifying at least one property of at least one portion of the structure, comprising:

an image-forming lens arrangement and a plurality of fibers which are configured to provide there through the electro-magnetic radiation, at least one first fiber of the fibers being configured to provide a first electro-magnetic radiation to the at least one portion so as to obtain the information, and at least one second fiber of the fibers configured to provide a second electro-magnetic radiation to the at least one portion of

the structure regarding which the information is being obtained so as to modify the at least one property; and

a dispersive arrangement configured to receive the first and second electromagnetic radiations, wherein the dispersive arrangement is structured to provide at least 625 spectrally-resolvable points without a controlled mechanical motion.

144. An apparatus for obtaining information associated with a structure, comprising:

an image-forming lens arrangement which is configured to provide a plurality of electro-magnetic radiations and a dispersive arrangement configured to receive the electro-magnetic radiations and forward a dispersed radiation of each of the electro-magnetic radiations to at least one portion of the structure regarding which the information is being obtained and at least partially overlap the at least one portion, wherein one of the electro-magnetic radiations has a wavelength in a first range, and another one of the electro-magnetic radiations has a wavelength in a second range, wherein each of the first and second ranges are at least one element that is different from another one of the second ranges, and wherein the dispersive arrangement is structured to provide at least 625 spectrally-resolvable points without a controlled mechanical motion.

145. An apparatus for obtaining information associated with a structure, comprising:

an image-forming lens arrangement which is configured to provide an electro-magnetic radiation and a dispersive arrangement configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof

to a particular location on at least one portion of the structure regarding which the information is being obtained,

wherein at least one of a property, an orientation or a position of the dispersive arrangement is capable of being modified to provide a further radiation to the particular location of the at least one portion, wherein at least one property of the dispersed radiation is capable of being different from a property of the further radiation, and wherein the dispersive arrangement is structured to provide at least 625 ~~100~~ spectrally-resolvable points without a controlled mechanical motion.

146. An apparatus for obtaining information associated with a structure, comprising:

an image-forming lens arrangement which is configured to provide there through electro-magnetic radiation; and

a dispersive arrangement which is configured to receive at least one portion of the electro-magnetic radiation and forward a dispersed radiation thereof to at least one portion of the structure regarding which the information is being obtained, wherein the lens and dispersive arrangements are sized so as to be encompassed within a needle having a gauge of about 20 or smaller, and wherein the dispersive arrangement is structured to provide at least 625 spectrally-resolvable points without a controlled mechanical motion.

147. The apparatus according to claim 74, wherein the optical fiber has an end portion that is provided at a position of an image plane of the at least one portion which is established by the lens.

148. The apparatus according to claim 68, further comprising a processing arrangement which receives data associated with the dispersed radiation provided to the at least one section of the structure, and generates a single image based on the data and as a function of a plurality of wavelengths of the electro-magnetic radiation.

First Claims 149-151. (Cancelled).

Second Claim 149. (Cancelled).

150. The apparatus according to claim 68, further comprising a detection arrangement which is configured to detect a further radiation provided from the structure.

151. The apparatus according to claim 150, wherein the dispersive arrangement is provided closer to the structure than the detection arrangement.

Claim 152 (Cancelled).

153. The apparatus according to claim 113, further comprising a detection arrangement which is configured to detect a further radiation provided from the structure.

154. The apparatus according to claim 153, wherein the dispersive arrangement is provided closer to the structure than the detection arrangement.

Claim 155 (Cancelled).

156. The apparatus according to claim 125, further comprising a detection arrangement which is configured to detect a further radiation provided from the structure.

157. The apparatus according to claim 156, wherein the dispersive arrangement is provided closer to the structure than the detection arrangement.

Claim 158 (Cancelled).

159. The apparatus according to claim 131, further comprising a detection arrangement which is configured to detect a further radiation provided from the structure.

160. The apparatus according to claim 159, wherein the dispersive arrangement is provided closer to the structure than the detection arrangement.

161. The apparatus according to claim 68, further comprising a detection arrangement which is configured to detect a further radiation provided from the structure.

162. The apparatus according to claim 150, wherein the dispersive arrangement is provided closer to the structure than the detection arrangement.

EVIDENCE APPENDIX

Nothing to include.

RELATED PROCEEDINGS APPENDIX

An appeal has been commenced by Appellants for U.S. Application Serial No. 11/781,722 with a filing date of July 23, 2007, which is a continuation application from the present application. This proceeding is to appeal from final rejections of the claims pending is that application.